

CLAIM(S):

1. An automatic screening apparatus for removing debris from a liquid stream, the screening apparatus comprising:
 - a support frame;
 - a screen connected to the support frame to retain the debris from the stream;
 - a first carriage assembly moveably engaged to the support frame, the first carriage assembly including a rake attached thereto to collect debris retained on the screen;
 - a second carriage assembly moveably engaged to the support frame, the second carriage assembly including a bucket pivotally mounted thereon for transporting debris received from the rake; and
 - a drive mechanism mounted to the support frame for moving the first and second carriage assemblies, wherein the drive mechanism interchangeably couples to either the first carriage assembly or the second carriage assembly to move the respective assembly.
2. The screening apparatus of claim 1 and further comprising a transfer mechanism to interchangeably couple the drive mechanism to either the first or second carriage assembly.
3. The screening apparatus of claim 2 wherein the transfer mechanism includes a positionable plate operably connected to the drive mechanism, wherein the plate is slidably engageable to either the first carriage assembly or the second carriage assembly to couple the drive mechanism to the respective carriage assembly when engaged thereto.
4. The screening apparatus of claim 3 wherein the transfer mechanism further includes a hydraulic cylinder connected to the positionable plate to urge the

positionable plate into engagement with either the first or second carriage assembly.

5. The screening apparatus of claim 1 and further comprising a plunging assembly to direct debris collected from the rake into the bucket.

6. The screening apparatus of claim 5 wherein the plunging assembly comprises a plunger movable between a home position and an extended position, whereupon in moving the plunger from the home position toward the extended position, the plunger directs debris collected from the rake into the bucket.

7. The screening apparatus of claim 6 wherein the plunging assembly further comprises a hydraulic cylinder to urge the plunger between the home position and the extended position.

8. The screening apparatus of claim 6 when the plunger is positioned within the bucket while at the extended position.

9. An automatic, self-relieving screening apparatus for cleaning a debris-laden stream, the automatic screening apparatus comprising:

- a screen for collecting the debris in the stream;

- a rake moveable relative to the screen for removing debris held by the screen;

- a temporary storage structure which receives debris from the rake; and

- a drive mechanism interchangeably coupled to either the rake or the temporary storage structure, the drive mechanism operable to selectively move the rake and remove debris from the temporary storage structure.

10. The automatic screening apparatus of claim 9 wherein the drive mechanism interchangeably couples to either the rake or the temporary storage structure by a transfer mechanism, the transfer mechanism including a slide plate operably engaged to the drive mechanism, wherein the slide plate is moveable to either engage the rake to couple the rake to the drive mechanism or engage the temporary storage structure to couple the temporary storage structure to the drive mechanism.
11. The automatic screening apparatus of claim 10 wherein the transfer mechanism further includes a hydraulic cylinder to urge the slide plate into engagement with either the rake or the temporary storage structure.
12. The automatic screening apparatus of claim 10 wherein the drive mechanism comprises:
 - a ball screw drive; and
 - a nut cooperably engaged to the ball screw, wherein the nut connects to the transfer mechanism.
13. The automatic screening apparatus of claim 9 and further comprising a plunger attached to the support frame for directing debris from the rake into the temporary storage structure.
14. The automatic screening apparatus of claim 13 wherein the plunger is moveable between a home position and an extended position, wherein the plunger directs the debris from the rake into the temporary storage structure while traveling from the home position toward the extended position.
15. The automatic screening apparatus of claim 13 wherein the plunger is positionable within the temporary storage structure to compress debris held therein.

16. The automatic screening apparatus of claim 9 and further comprising a sensor to monitor the force exerted by the plunger while traveling toward the extended position, whereupon encountering a selected maximum force, the transfer slide decouples from the rake and couples to the temporary storage structure, whereby the drive mechanism positions the temporary storage structure to dump the debris held therein.

17. A method of automatically removing debris from a contaminated flowing liquid comprising:

- positioning a screen in contact with the flowing liquid;
- activating a drive mechanism to move a rake across the screen to remove debris retained on the screen;
- directing the debris from the rake into a bucket;
- coupling the drive mechanism to the bucket; and
- activating the drive mechanism to dump the bucket.

18. The method of claim 17 wherein directing the debris from the rake into the bucket comprises activating a plunger.

19. The method of claim 17 and further comprising sensing when the bucket is full.

20. The method of claim 17 wherein coupling the drive mechanism to the bucket comprises positioning a transfer plate to disengage the rake and engage the bucket.